

# (12) UK Patent Application (19) GB (11) 2 301 041 (13) A

(43) Date of A Publication 27.11.1996

(21) Application No 9609351.3

(22) Date of Filing 03.05.1996

(30) Priority Data

(31) 9510630

(32) 25.05.1995

(33) GB

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(51) INT CL<sup>6</sup>

A63B 53/06

(52) UK CL (Edition O )

A6D D23A

(56) Documents Cited

None

(58) Field of Search

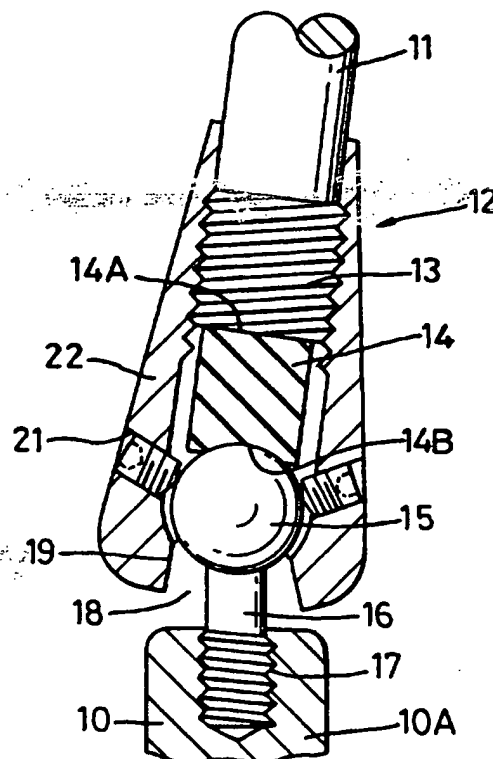
UK CL (Edition O ) A6D D23A

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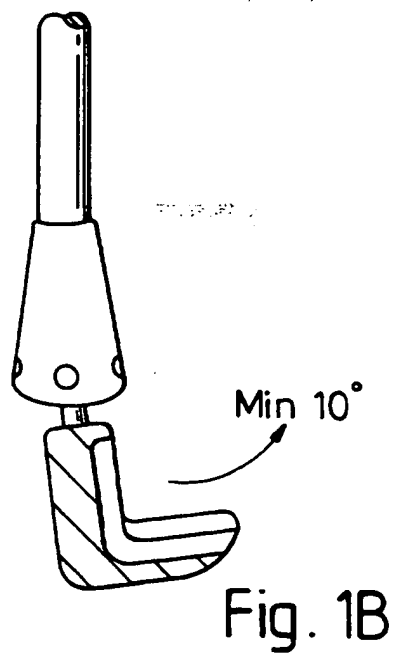
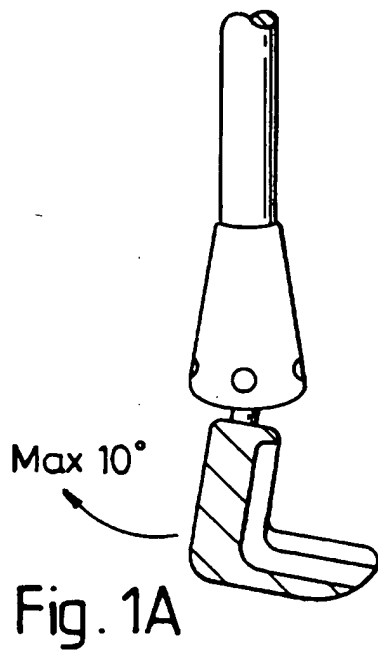
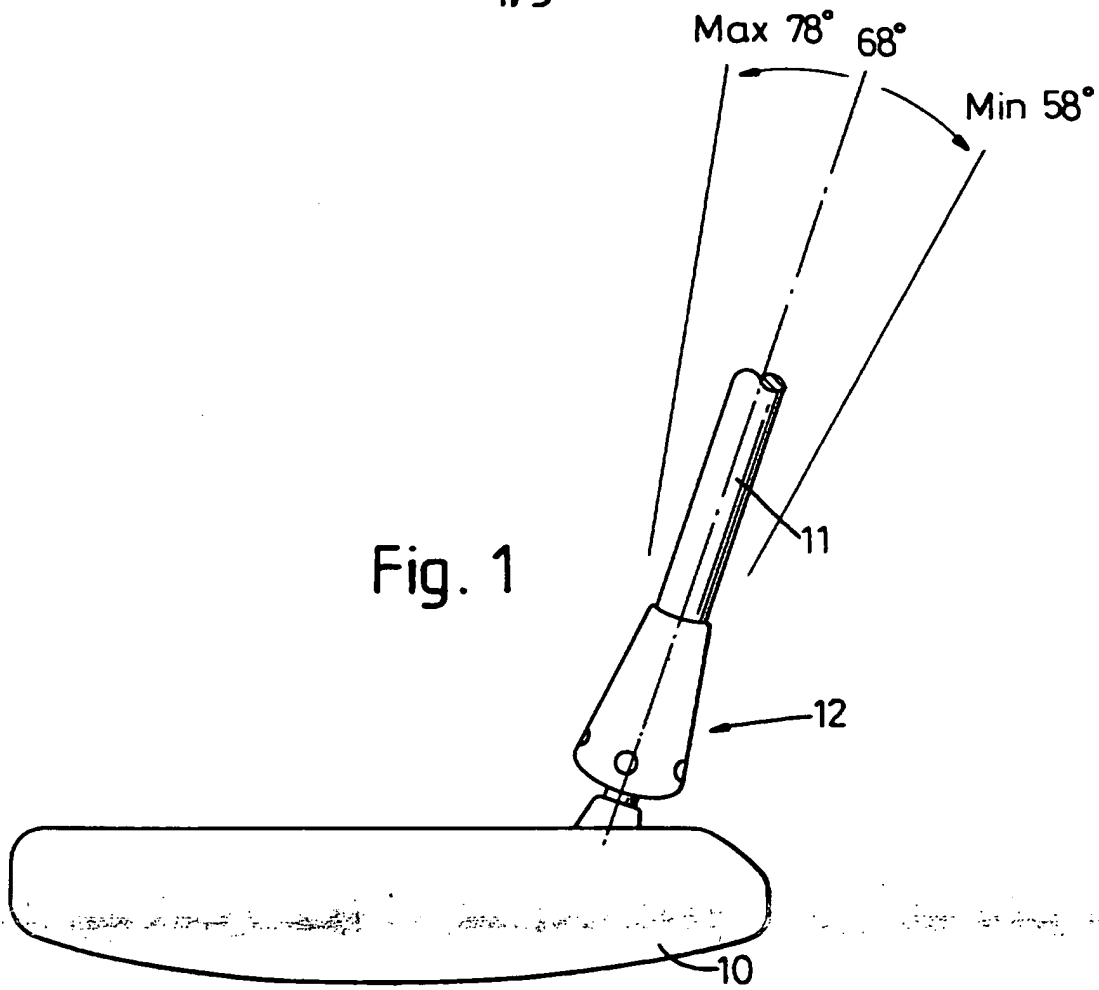
(54) Golf putter

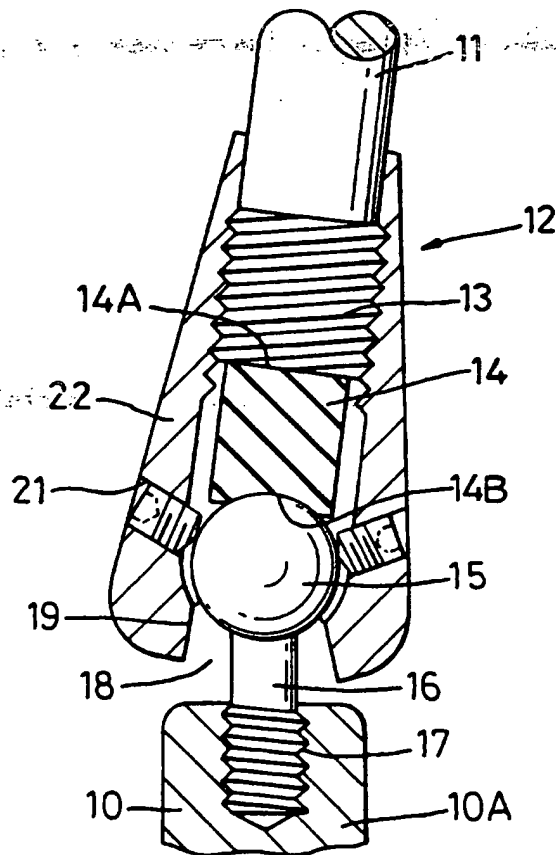
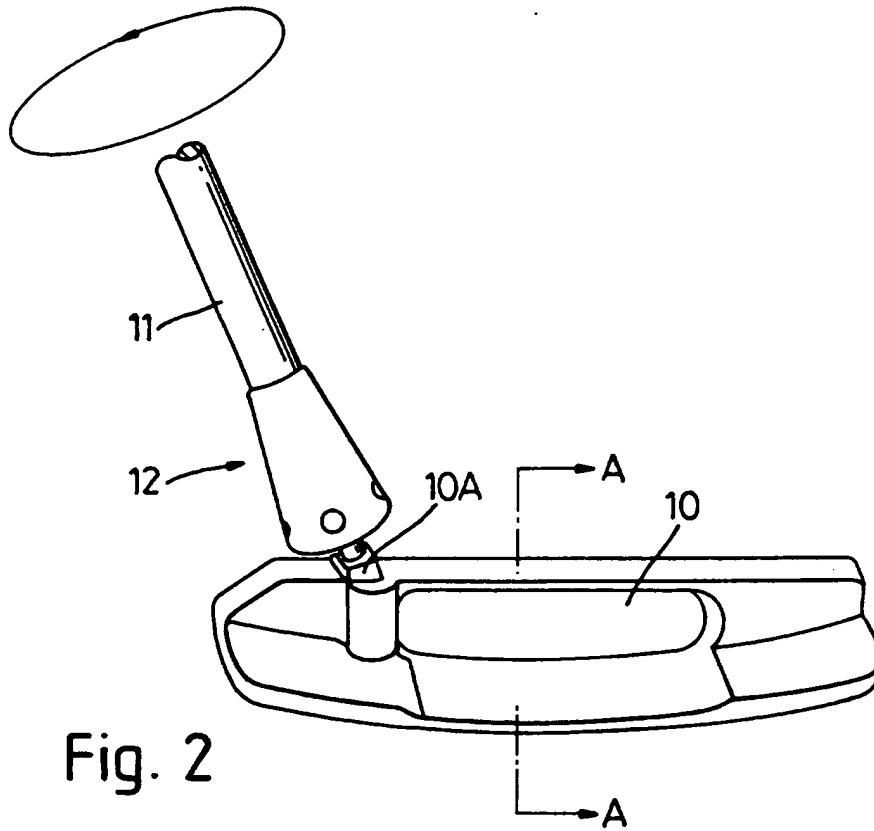
(57) A golf putter includes a ball-and-socket joint interconnecting the head 10 and shaft 11. The ball 15 is fixed to the head and the socket 12 is formed at one end of shaft 11. The socket includes a sleeve member 22 which may be turned relative to the shaft to cause the ball to move into tight engagement with a plastics bearing member 14 located within the sleeve.



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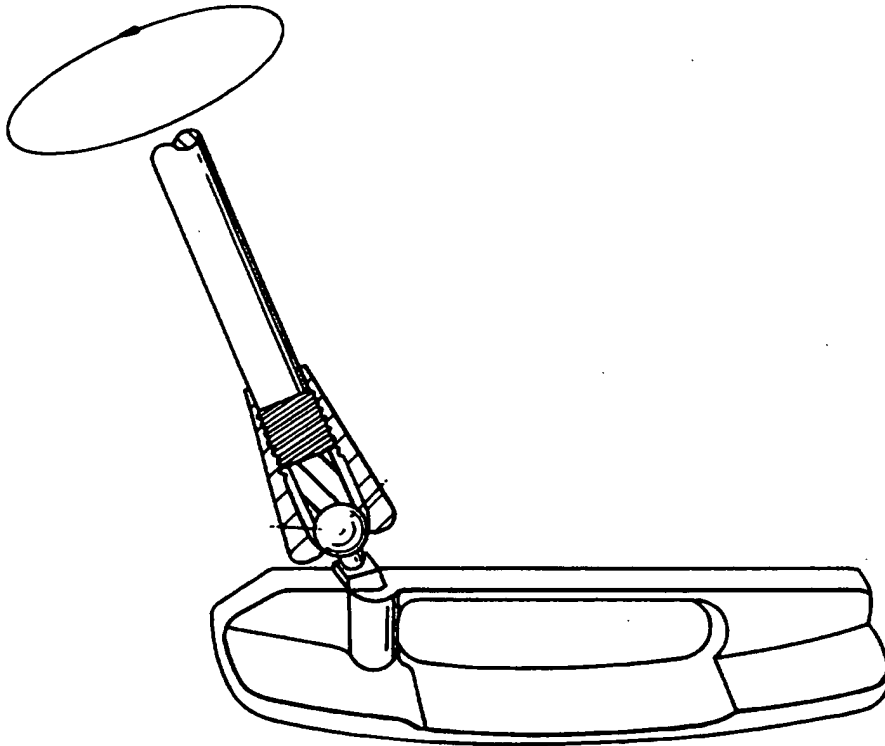


Fig. 3

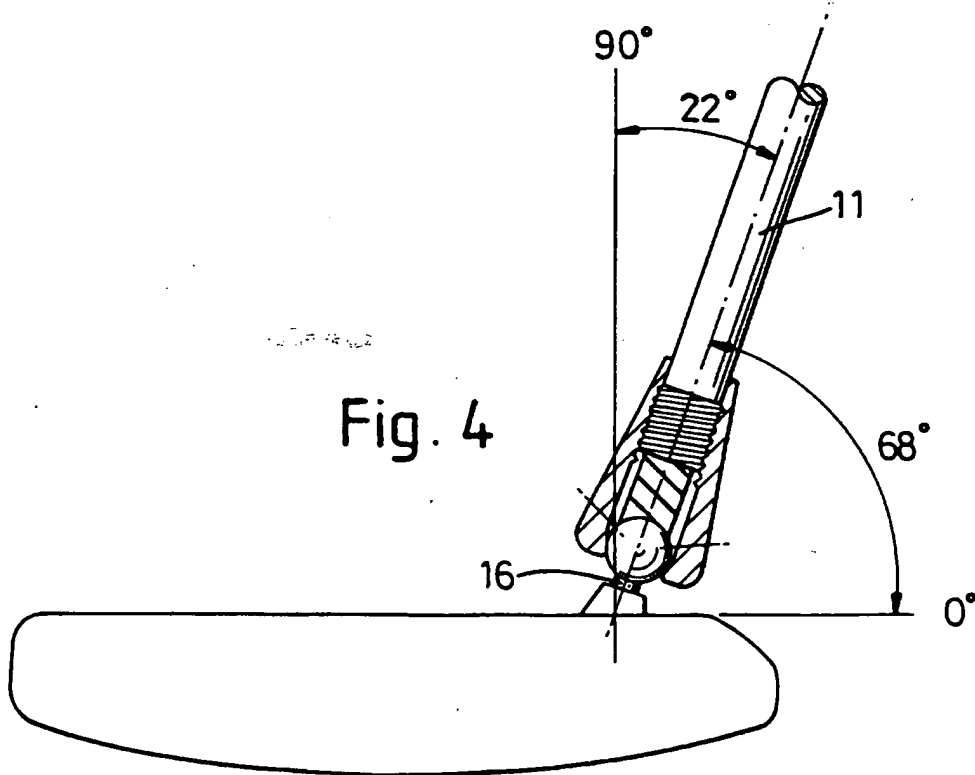


Fig. 4

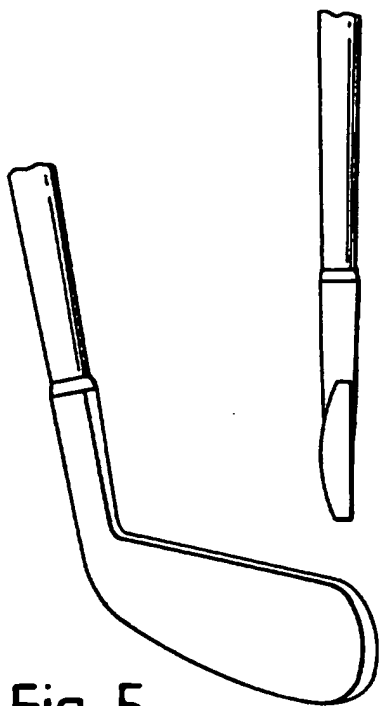


Fig. 5

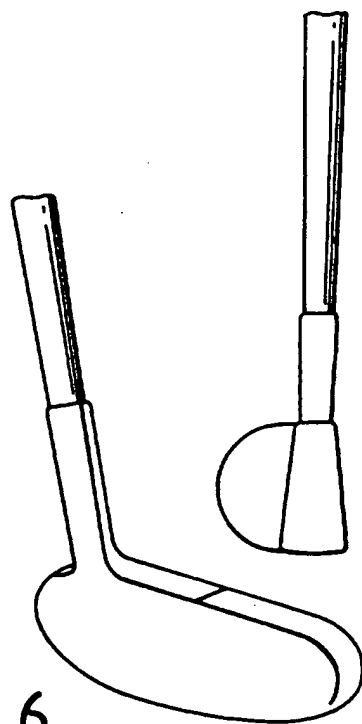


Fig. 6

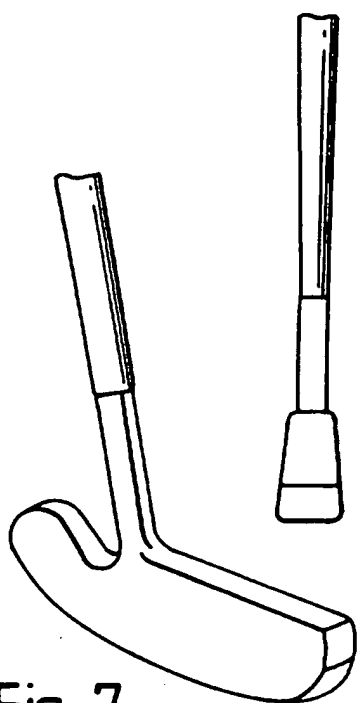


Fig. 7

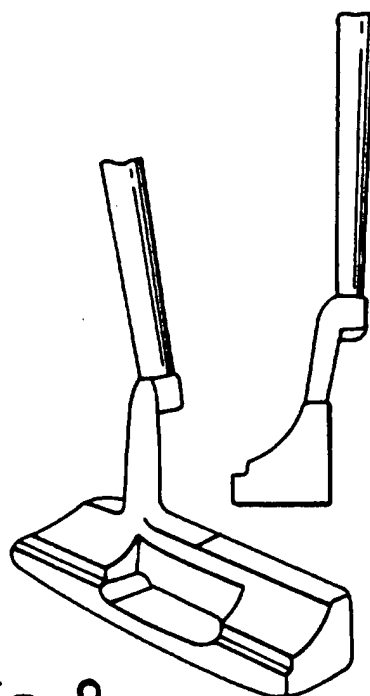


Fig. 8

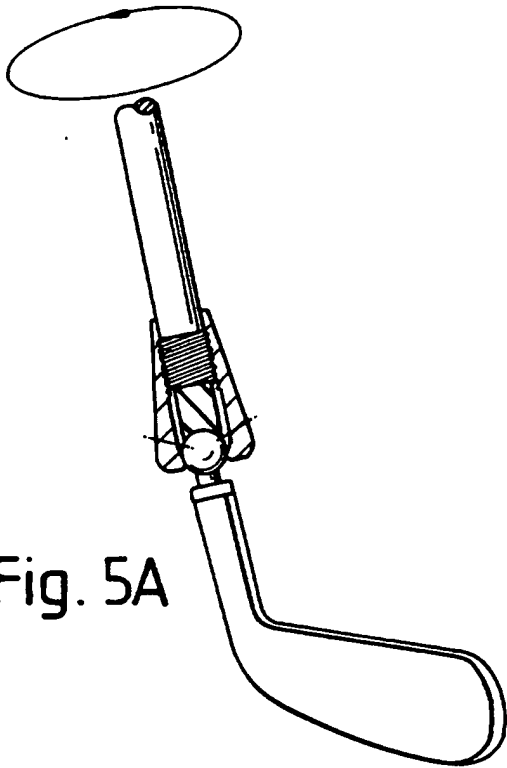


Fig. 5A

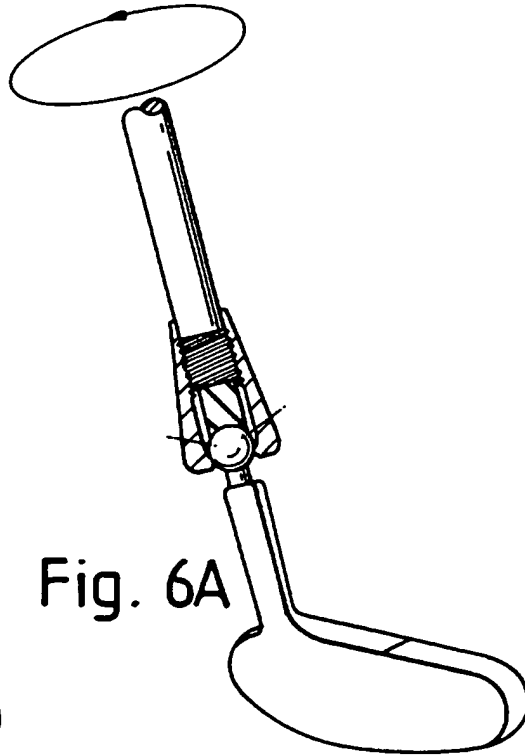


Fig. 6A

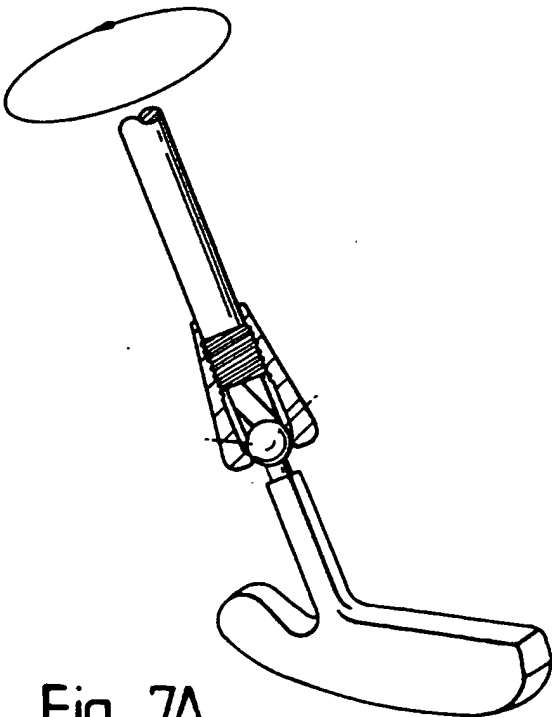


Fig. 7A

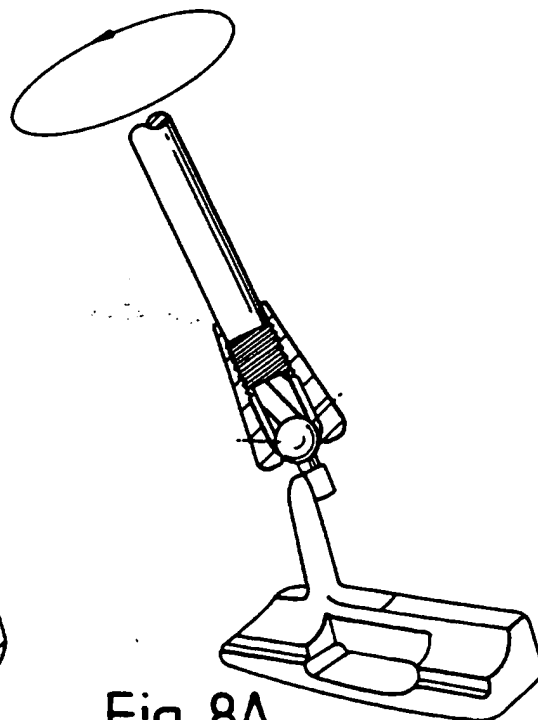


Fig. 8A

## GOLF PUTTER

## FIELD OF INVENTION:

This invention relates to golf putters which are golf clubs used primarily on that part of a golf course known as a green which is the area including and surrounding the golf hole and which is characterised by having normally a very smooth surface over which the golf ball will readily roll. A golf putter is used to propel a golf ball over a relatively short distance over the surface of the green. It may also typically be used on shorter pitch and put courses and on dedicated putting greens.

## BACKGROUND OF THE INVENTION:

Putting can be the most frustrating part of the game of golf. Players spend a lot of time practising to improve their ability with a standard putter, trying to adapt their body to the putter. They are unaware of the fact that even the slightest change in the angle of the shaft and head could improve their putting dramatically. It is a purpose of this invention to provide a putter which can be adopted to the body of the player in a manner selected by the player himself.

## SUMMARY OF THE INVENTION:

According to the present invention there is provided a golf putter in which the head and shaft are connected together by means of a ball-and-socket joint allowing relative movement between the head and the shaft, the ball of the ball-and-socket joint being associated with the head of the putter and the socket of the ball-and-socket joint being associated with the shaft of the putter, said socket being provided by means of a sleeve member within which is located a bearing member having a bearing surface for engagement with the ball-and-socket joint, said sleeve member being movable axially relative to the main body of the shaft and being shaped so as to hold captive the ball of the ball-and-socket joint within said sleeve member, the arrangement being such that relative axial movement between the sleeve member and the main body of the shaft member causes the ball to move into tight engagement with the plastics bearing member whereas relative movement in the opposite direction releases the ball from said tight engagement with the plastics bearing member, thereby allowing the relative angular position of the shaft and the head of the club to be altered.

Preferably, the bearing member carries a concave bearing surface. More preferably the bearing member is a separate element, that is to say, is not integral with the main body of the shaft. The bearing member may be made of a plastics material.

Preferably the ball of the ball-and-socket joint is located generally above the head of the putter when the putter is in use.

Preferably, the sleeve member is provided with a plurality of peripherally spaced apart gripping members which are radially adjustable to positions where they engage the ball of the ball-and-socket joint. The gripping members may be provided by four "set screws".

#### DESCRIPTION OF THE DRAWINGS:

Figure 1 is a side view of a golf putter according to the present invention.

Figures 1A and 1B are cross-sectional views of the putter of Figure 1 taken on the line A-A of Figure 2.

Figure 2 is a perspective view of the putter of Figure 1.

Figure 2A is a detailed view, partly in longitudinal section, of the joint between the head and the shaft of the putter of Figure 1.

Figure 3 is a perspective view, partly in section, of the putter of Figure 1.

Figure 4 is a side view, partly in section, of the putter of Figure 1.

Figures 5-8 show perspective views of four types of known putter.

Figures 5A-8A are perspective views, partly in section, of putters of the present invention, the types of putters corresponding to those shown in Figures 5-8 respectively.

#### DESCRIPTION OF AN EMBODIMENT OF THE INVENTION:

Referring to Figures 1-4 of the accompanying drawings, a golf putter includes a putter head 10 and, extending therefrom, a shaft 11 ending in a grip region (not shown). Head 10 is attached to shaft 11 by means of a ball-and-socket joint indicated generally at 5 in Figures 1 and 2.

As indicated in particular in Figure 2A, the ball 15 of the ball-and-socket joint is associated with and forms part of head 10 and the socket 12 is associated with and forms part of shaft 11. Ball 15 is made of solid metal and is attached to integral stem 16 which is screw-threaded from the end remote from ball 15 over at least half its length. Ball and stem 15, 16 are



attached to head 10 by screw-threaded engagement of stem 16 within threaded blind bore 17 located in integral lug 10A of head 10. As shown in Figures 1 and 2, lug 10A, as well as blind ball 17 located therein, extend upwardly and rearwardly from the top surface of head 10 when head 10 is orientated in its "in-use" position.

The socket 12 of the ball-and-socket joint is located at that end of shaft 11 remote from the grip. The socket 12 includes a sleeve member 22 and, located within sleeve member 22, a bearing member 14. Bearing member 14 is made out of a hard-wearing plastics material such as Teflon or a polyamide. It is in the form of a solid short, substantially cylindrical body which, in the assembled joint, lies between ball 15 and the end of shaft 11 remote from the grip. End 14A of bearing member 14 is flat for engagement with the corresponding flat end of shaft 11. The opposite end 14B of bearing member 14 is concave with a corrative such as to fit the convex surface of ball 15.

The end of shaft 11 is provided with a screw-threaded portion 13. Socket 12 includes a sleeve member 22 which is made of metal and whose exterior shape is substantially frusto-conical, the relatively wide diameter end being rounded. Sleeve member 22 defines a substantially cylindrical internal space having a screw-threaded portion at one end for engagement with the screw-threaded region 13 at the end of shaft 11. At the other end, the internal surface of sleeve 22 turns gently inwardly to meet an outwardly tapering straight section forming an entrance into the interior of the sleeve and defined by that end of the sleeve wall remote from the threaded portion. As illustrated in Figure 2A, the joint (when assembled) has ball 15 in position and held captive between bearing member 14 and the somewhat restricted entrance defined by the above-mentioned gently curved region and the tapered inlet.

Sleeve member 14 is also provided with four threaded holes which lie close to the relatively enlarged end of sleeve member 22 and are circumferentially equi-spaced about the sleeve member. Each hole 21 extends across the wall of sleeve member 22 from the outside of the wall in a radial and downward direction, as illustrated in Figure 2A. Located within each hole 21 is a set-screw which may be turned within the hole so that its inner end is brought into engagement with the surface of ball 15.

With the arrangement assembled as shown in Figure 2A, the firm connection between the shaft and the head of the putter may be achieved by rotation of shaft 11 relative to sleeve member

22. Rotation in the appropriate direction causes shaft 11 to move in a direction towards ball 15 and the end of the shaft 11 pushes bearing member 14 into closer engagement with the surface of ball 15. As a result, ball 15 is driven into engagement also with the constricted inner surface of sleeve member 22. Sufficient relative rotation of shaft 11 will result in a tight joint being achieved with shaft 11 at the desired orientation relative to clubhead 10. The striking force created when the player putts a golf ball using the club will not be strong enough to overcome this tight connection between shaft and clubhead. However, manual pressure applied between the shaft 11 and sleeve member 14 will be sufficient to cause relative rotation therebetween, in the opposite direction to that to tighten the joint, so as to release the joint to allow a different relative orientation of shaft and clubhead to be realised.

With the joint in its manually tightened position, it is possible, if desired, to create a more permanent tight joint by causing the set screws to engage firmly the surface of ball 15.

As illustrated in Figure 4, when the shaft is positioned so that its longitudinal axis is aligned with the longitudinal axis of ball stem 16, and with the club head resting on the ground, shaft 11 makes an angle of  $68^\circ$  with the ground and correspondingly an angle of  $22^\circ$  with the vertical. The ball-and-socket joint allows universal movement within a restricted  $20^\circ$  conical angle as illustrated in Figure 1. Accordingly, the shaft may be moved from a minimum  $58^\circ$  angle (relative to the ground) to a maximum  $78^\circ$  angle. This limited movement is due to the constraint effected by the diameter of the lower opening 18 of the sleeve member 22, the wall thickness 19 of the lower opening and the diameter of stem 16. In other embodiments in accordance to the present invention the extent of the relative movement between the shaft and the clubhead may be more or less than the maximum  $10^\circ$  of this embodiment. However, this angle limitation, together with the possibility of relatively permanent fixing of the joint using the four set-screws, fulfil the requirements of the official golf rules of the Royal and Ancient club.

Referring to Figures 5-8 of the accompanying drawings, four basic types of known golf putters are illustrated. These four types are known as blade (Figure 5), mallet (Figure 6), centre shaft (Figure 7) and ping (Figure 8).

Figures 5A-8A illustrate the same types of golf clubs but, in each case, they incorporate the present invention.

Variations of the above-described embodiments are possible within the scope of the present invention. By way of example, the ball of the ball-and-socket joint may be made of suitable plastics material. By way of further example, stem 16 may be firmly fixed in place within lug (10A) of head (10) by means of a combination of a screw-threaded engagement and a strong glue.

## CLAIMS

1. A golf putter in which the head and shaft are connected together by means of a ball-and-socket joint allowing relative movement between the head and the shaft, the ball of the ball-and-socket joint being associated with the head of the putter and the socket of the ball-and-socket joint being associated with the shaft of the putter, said socket being provided by means of a sleeve member within which is located a bearing member having a bearing surface for engagement with the ball of the ball-and-socket joint, said sleeve member being movable axially relative to the main body of the shaft and being shaped so as to hold captive the ball of the ball-and-socket joint within said sleeve member, the arrangement being such that relative axial movement between the sleeve member and the main body of the shaft member causes the ball to move into tight engagement with the bearing member whereas relative movement in the opposite direction releases the ball from said tight engagement with the bearing member, thereby allowing the relative angular position of the shaft and the head of the club to be altered.

2. A golf putter according to Claim 1 in which the bearing member carries a concave bearing surface.

3. A golf putter according to Claim 2 in which the bearing member is non-integral with the shaft.

4. A golf putter according to Claim 3 in which the bearing member is made of plastics.

5. A golf putter according to any of the preceding claims in which the ball of the ball-and-socket joint is located generally above the head of the putter when the putter is in use.

6. A golf putter according to any of the proceeding claims in which the sleeve member is provided with a plurality of peripherally spaced-apart gripping members which are radially adjustable to positions where they engage the ball of the ball-and-socket joint.

7. A golf putter according to Claim 4 in which said gripping members are four set-screws.

8. A golf putter according to Claim 1 and substantially as herein described.
9. A golf putter substantially as herein described with reference to the accompanying drawings.



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Patent  
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Application No: GB 9609351.3  
Claims searched: 1-9

Examiner: David Whitfield  
Date of search: 11 June 1996

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.O): A6D D23A

Int CI (Ed.6): A63B 53/06

Other: ONLINE:- WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
	NONE	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.